

SWIR Cameras & Optimum Illumination for Macroscopy and Microscopy

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Abstract

Traditionally, the visible spectral range is used for image detection in life sciences, especially in microscopy. In addition to the visible, there are spectral ranges like UV and deep UV on one side and "shortwave infrared" (SWIR) on the other side of the spectrum. These wavelengths allow visualisation and detection of features, characteristics, and spectral fingerprints that cannot be seen in the visible part of the spectrum. In this presentation a new InGaAs camera system will be highlighted, which allows detection in both the visible and the SWIR range. Along with presenting features of the camera, some application areas will be presented ranging from NIR fluorescence to biomedical applications such as in-vivo and intravital microscopy. A prerequisite for this type of imaging are bright and reliable light sources for excitation of fluorophores which emit in the NIR and SWIR. The X-Cite light sources will be presented, which feature high excitation power for fluorescence and absorption applications across the UV-visible-NIR spectrum. In addition, the corresponding requirements for effortless imaging in the NIR and SWIR will be discussed to optimize the seamless combination of light generation and detection for potential biomedical imaging applications.